### Engineering (ENGR)

**Courses**

**ENGR 1000. Intro to Engineering. 2 Hours.**
For students considering an Engineering career. Introduces the functions and career paths for various branches of Engineering and the nature and challenges of the Engineering profession, including educational requirements of various fields, as well as history, ethics, and the engineering method. Also serves as a First Year Experience (FYE) seminar, introducing students to skills and resources designed to make them more successful university students. FA.

**ENGR 1050. Intro to Engineering Design. 3 Hours.**
For pre-engineering students. Covers basic principles behind the engineering design process, including all be introduced to solid modeling software, gathering design information, development of design alternatives, working in teams to support the entire design process, evaluating design alternatives, and communicating design outcomes. Ethics of design will be presented, and students will develop three simple projects, two of which will be in teams. Prerequisite: MATH 1060 or MATH 1080. SP.

**ENGR 2010. Statics. 3 Hours.**
For pre-Engineering students. Covers the equilibrium of bodies, that is, those that are either at rest or move with a constant velocity. Covers properties of vectors as they apply to force systems, including trusses, frames, and machines. Applications of friction and forces in beams. Prerequisite: MATH 1220 (can be concurrently enrolled), and MATH 1210. FA.

**ENGR 2030. Dynamics. 3 Hours.**
For pre-Engineering students. Covers the kinematics of a particle in both rectilinear and curvilinear motion, as well as application of Newton's laws of motion to the kinetics of particles in detail for several types of motion. Force and acceleration, and energy and momentum are used as methods for solving dynamic problems. Planar kinematics and kinetics of rigid bodies are covered. Prerequisite: ENGR 2010. Offered upon sufficient student need.

**ENGR 2140. Strength of Materials. 3 Hours.**
For pre-Engineering students. Introduces the internal effects (stress, strain, elastic and inelastic behavior, shear and bending movement) of loads (axial, torsion, and bending) on engineering systems. Prerequisite: ENGR 2010. Offered upon sufficient student need.

**ENGR 2250. Electrical Circuits. 3 Hours.**
For pre-Engineering students. Presents basic concepts of electric circuit theory, including voltage, current, power, resistance, capacitance, and inductance. Covers circuit analysis techniques, including Kirchoff's Laws, node voltages, and mesh currents for direct and alternating current. Circuits discussed include first and second order inductive and capacitive circuits (RC, RL, RLC). Operational amplifiers are introduced into circuit analysis. Phasers are used in conjunction with AC circuits. Prerequisites: MATH 2280 (can be concurrently enrolled), and MATH 1220. Offered upon sufficient student need.

**ENGR 2255. Electrical Circuits Lab. 1 Hour.**
Introductory lab course for pre-Engineering students. Discusses electrical circuit measurements and analysis methods. Through several laboratories students are introduced to instrumentation important to the understanding of electrical circuit analysis and the safety required with the use of instrumentation. Several different circuits will be analyzed including LC and RC circuits, resistive networks, operational amplifiers, and AC circuits. Includes basic circuit design and analysis techniques using circuit analysis software. Prerequisites: MATH 1220, and MATH 2270. Corequisite: ENGR 2250. Offered upon sufficient student need.

**ENGR 2300. Engineering Thermodynamics. 3 Hours.**
For pre-Engineering students. Covers fundamentals of thermal energy and work, thermodynamic properties of fluids and equations of state, open and closed systems, first and second laws of thermodynamics, and applications to thermal and mechanical processes. Prerequisites: MATH 2210 (can be concurrently enrolled) and MATH 1220. Offered upon sufficient student need.

**ENGR 2990. Seminar in Engineering. 0.5-3 Hours.**
For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit hour offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other non-traditional instruction methods. Note that this course is an elective and does not fulfill general education or program requirements. Prerequisite: Instructor Permission.